***Michael T. Belongia***

*Michael T. Belongia is a research officer at the Federal Reserve Bank of St. Louis. Anne M. Grubish provided research assistance.*

# Prospects for International Policy Coordination: Some Lessons from the EMS

"Altogether, then, economic co-operation is no match for motherhood."
Clive Crook, *The Economist*

THE strong rise in the value of the dollar in the early 1980s and its sharp decline since February 1985 are alleged to have had wide-ranging effects on the economies of the United States and its major trading partners. In response to concerns about the costs of adjusting to large exchange rate movements specifically and the effects of divergent economic policies generally, policymakers have called for greater coordination of economic policies among the world's major industrial countries.[1] But, despite the stated official desire for greater policy coordination, little is certain about how it might work in practice. Some theoretical results suggest that there are potential gains from coordinated policy actions; these results, however, are not robust.[2]

One example of an explicit agreement for policy coordination is the European Monetary System (EMS). Established in 1979, the EMS was formed to stabilize bilateral nominal exchange rates among member countries. Because it is difficult to identify the direct benefits of more stable exchange rates per se, analysts typically have discussed the potential benefits of such coordination in terms of increased trade flows, faster real growth and policy convergence among member nations.

[1]At the September 1985 Plaza Accord, for example, the G-5 countries agreed to coordinated intervention policies that would reduce the value of the dollar. Since that meeting, there have been subsequent economic "summits" to discuss both target values for exchange rates (the Louvre Accord of February 1987) and indicators by which policies could be monitored (the June 1987 Venice Summit). Both the Bank for International Settlements (BIS) and the OECD have called for greater fiscal policy cooperation, with lower budget deficits in the United States and expansionary policies in Japan and Germany. See Bank for International Settlements (1987) and Organization for Economic Cooperation and Development (1987).

[2]Models using game theory have tended to conclude that policy cooperation will produce lower social welfare losses than non-cooperative policies. Some empirical work has provided evidence that supports the game theory results; see Currie and Levine, for example. It should be noted, however, that both lines of work are based on arbitrary social welfare functions and the existence of a benevolent policymaker. The public choice literature, in contrast, suggests that the wealth of the policymaker dominates social objectives as a criterion for choosing particular policy paths. If true, a quite different loss function would apply to policy choices. More generally, the game-theoretic results depend heavily on the loss function specified. Fischer (1987) and Frankel and Rockett (1987) also have shown that the results depend importantly upon the economic models used to evaluate policy effects.

As the one case in which some form of explicit cooperation has been adopted, the EMS offers an opportunity (and data) to examine its effect on a variety of economic indicators. This article reviews the economic experience of EMS countries relative to non-EMS countries during the 1980s to see whether exchange rate coordination has been associated with differential gains in other measures of economic well-being as well as to draw inferences about the likely effects of policy coordination on a greater scale by the industrial economies.

## THE EMS: AN OVERVIEW

The EMS, which was established formally on March 13, 1979, was first composed of the nine European Community (EC) countries: Belgium, Denmark, France, West Germany, Ireland, Italy, Luxembourg, The Netherlands and the United Kingdom. Greece, which subsequently joined the EC, became an EMS partner in 1985 but Spain and Portugal, which joined the EC in 1984, have not yet become members of the EMS. Briefly, EMS membership requires each nation first to deposit 20 percent of its gold and gross dollar assets with the European Monetary Cooperation Fund (EMCF). In exchange, each nation receives an equivalent amount of European Currency Units (ECUs), which serve primarily as a unit of account for EMS functions (see Appendix). This asset exchange, however, is not so much a separate part of joining the EMS as it is a preliminary step to pursuing the System's objectives.[3] The second part of EMS membership involves the agreement to pursue stable nominal exchange rates, at agreed levels, for each bilateral set of rates. One rationale for this policy objective is that exchange rate variability is a source of uncertainty that reduces trade and the traded goods sector is a large portion of each EMS member economy.[4]

Although exchange rate objectives are "set," the EMS is not strictly a fixed-rate system; adjustments to the exchange rate levels have been made from time to time.[5] For example, in a major exchange rate realignment in March 1983, the French franc, Italian lira and Irish pound were devalued between 2.5 percent and 3.5 percent, while the remaining currencies were revalued between 2.5 percent (Danish krone) and 5.5 percent (German mark). As the IMF explains:

> Like previous realignments, this realignment had become necessary as a result of continued differences in the underlying strength of the participating countries' external positions, which reflected in turn divergences in economic policies and cost-price performance. These differences had generated expectations of exchange rate changes and led to large speculative capital flows.[6]

Similarly, in 1985, the lira was devalued 6 percent and other currencies revalued 2 percent when

> [t]he worsening of the current account reflected primarily the maintenance of a rate of growth in domestic demand higher than that of Italy's partners as well as the lagged effects of a significant loss of competitiveness vis-a'-vis other EMS countries over the previous two years.[7]

Thus, when fundamental differences in economic performance require changes in the established exchange rate targets, the EMS has revalued them. Table 1 shows the dates of these revaluations and their effect on individual currencies.

Between revaluations, bilateral rates are allowed to vary within margins of 2.25 percent of the desired values; because Italy historically has had higher rates of inflation than the other EMS countries, the lira has a band of 6 percent. Should bilateral rates violate these margins, however, the central banks in control of the two currencies are expected to intervene in foreign exchange markets in amounts necessary to bring the rates back into the agreed-upon ranges.[8]

The foregoing discussion represents a simple characterization of EMS policy coordination. The most important exception to this characterization for this study is that, although the U.K. exchanged

---

[3]A detailed summary of the ECU, as well as the evolution of the EMS, is in Ungerer, et al. (1986). Karamouzis (1987) presents a shorter overview of the system and policy coordination.

[4]Both the theoretical and empirical evidence on a link between exchange rate variability and trade are ambiguous. DeGrauwe (1987, 1988), for example, provides evidence suggestive of a negative effect. Many others, surveyed in Farrell, et al. (1983), find no significant relationship between measures of exchange rate variability and trade. And, moving in the opposite direction, Franke (1987) provides theoretical reasoning for a positive relationship between exchange rate variability and trade. On balance, however, the predominant result seems to be that there is no important relationship between the two variables.

[5]Ungerer, et al., table 10.

[6]Ibid, p. 12.

[7]Ibid, p. 13.

[8]See Ungerer, et al., pp. 4–8, for a discussion of how interventions are conducted by the central banks of nations that participate in the exchange rate mechanism (ERM).

Table 1

**EMS Realignments: Percentage Changes in Bilateral Central Rates**

| | German mark | Belgian franc | Danish krone | French franc | Irish pound | Italian lira | Dutch guilder |
|---|---|---|---|---|---|---|---|
| 1979 9/24 | +2 | | −2.86 | | | | |
| 11/30 | | | −4.76 | | | | |
| 1981 3/23 | | | | | | −6 | |
| 10/5 | +5.5 | | | −3 | | −3 | +5.5 |
| 1982 2/22 | | −8.5 | −3 | | | | |
| 6/14 | +4.25 | | | −5.75 | | −2.75 | +4.25 |
| 1983 3/21 | +5.5 | +1.5 | +2.5 | −2.5 | −3.5 | −2.5 | +3.5 |
| 1985 7/22 | +2 | +2 | +2 | +2 | +2 | −6 | +2 |
| 1986 4/7 | +3 | +1 | +1 | −3 | | | +3 |
| 8/4 | | | | | −8 | | |
| 1987 1/12 | +3 | +2 | | | | | +2 |

SOURCE: Deutsche Bundesbank, *Intereconomics* (September/October 1987).

gold and dollar reserves for ECUs, it did not agree to participate in the cooperative effort to stabilize exchange rates.[9] Thus, while the U.K. is an EMS member, its exchange rate is not specifically tied to those of the other EMS nations. To make this distinction, the EMS countries that participate in the exchange rate mechanism (ERM) often are referred to as the ERM countries.

### *The ERM Has Reduced Exchange Rate Variability*

Various studies have concluded that the ERM has significantly reduced the variability of exchange rate movements among the member countries. Table 2, reproduced from an IMF study by Ungerer, et al. (1986) provides one indication of how much the variability of monthly average nominal exchange rates, as measured by the coefficient of variation, declined after the EMS was formed; a similar pattern emerges if one examines data for real exchange rates (nominal exchange rates adjusted by CPIs) or other measures of variability, such as standard deviations; these reductions in bilateral exchange rate variability between ERM participants are statistically significant.[11] Finally, as depicted in the bottom portion of table 2, the IMF analysis indicates that exchange rates for non-ERM countries, such as the United Kingdom, the United States and Japan, generally experienced increased variability in the post-1979 period. Thus, relative to the exchange rate behavior of non-ERM industrial countries, the ERM has significantly reduced fluctuations in the real and nominal bilateral exchange rates among its members.[12]

## ECONOMIC POLICY COORDINATION: A MORE GENERAL ANALYSIS

The ERM has achieved greater exchange rate stability. The usefulness of such policy coordination, however, must be judged ultimately on the basis of relative economic performance. This more general criterion for judging the efficacy of such coordination is important because economic theory does not suggest that stable exchange rates, per se, guarantee generally desirable economic outcomes.

[9]Greece, Portugal and Spain also do not participate in the exchange rate mechanism.

[10]Ibid, pp. 4–5 and pp. 18–21. Also see related evidence, provided by Rogoff (1985a), who found that bilateral exchange rates between EMS members have become more *predictable.*

[11]See Ungerer, et al., tables 16–21. The coefficient of variation is the standard deviation of a series divided by its mean.

[12]A contrary view is presented by Fels (1987). He argues that, because only n-1 bilateral rates in an n-exchange rate system are freely determined, the ERM really is nothing more than a dollar/Dmark system that pulls other exchange rates with it. More important, he argues that the ERM appears to have succeeded in the early 1980s only because the dollar's real value had risen sharply and stimulated export sales from ERM countries to the United States. As a consequence, member nations did not feel the need to pressure Germany to lead a currency devaluation through expansionary measures. Fels also conjectures — and is supported by recent developments — that realignments or other pressures on the ERM will occur as the dollar weakens.

## *Exchange Rate Stability, Economic Policies and Economic Performance Are Not Necessarily Related!*

The ERM does not specify explicitly that member nations must coordinate policy actions. In other words, although the ERM members may agree to specific ranges on bilateral exchange rates, maintaining those ranges may be achieved, in principle, by a wide variety of policy actions.

To illustrate this point, consider a simple model of the nominal exchange rate:

$$(1)\quad e = \underset{\substack{\text{monetary}\\\text{policy}\\\text{measure}}}{(m^* - m)} \underset{\substack{\text{financial}\\\text{market}\\\text{conditions}}}{- h(i^* - i)} \underset{\substack{\text{real}\\\text{output}\\\text{conditions}}}{- k(y^* - y)}$$

where: $e$ = the exchange rate $\left(\frac{\text{foreign \$}}{\text{domestic \$}}\right)$;

$m$ = the nominal money supply;
$i$ = the nominal interest rate;
$y$ = real GNP;
$k$ = the income elasticity of real money demand;
$h$ = the interest response of real money balances; and
$*$ indicates values in a foreign country.

All variables in equation 1, except the interest rate, are expressed as natural logarithms.[13] The equation implies that a country's currency will depreciate (one unit of domestic currency will purchase fewer units of the foreign currency) if domestic money growth accelerates, domestic nominal interest rates decline or domestic real economic growth slows relative to changes in the equivalent measures in a foreign economy.

Once one recognizes, as in equation 1, that *differences* between domestic and foreign economic values determine the level of exchange rates, one can see clearly that a stable value for the nominal exchange rate is consistent with many different economic and policy environments and outcomes. For example, two countries could exhibit individually real growth of plus or minus 3 percent; as long as the difference between their real growth rates remained unchanged, however, the exchange rate, *ceteris paribus*, would be stable. Similarly, inflation in each country could be 20 percent or zero; other things the same, however, the exchange rate would be stable so long as the inflation differential were stable. Thus, stable exchange rates can be observed under a wide range of economic policies and conditions.

Equation 1 also points out that the exchange rate can be affected by policy actions in either the domestic or foreign country. If, for example, e were the French franc/DM exchange rate and the DM were rising (e, measured as French francs per DM, would be rising), e could be decreased (the DM made to decline) by increasing the German money stock relative to the French money stock. One way in which this might be accomplished would involve the Bundesbank and/or the Bank of France selling DM-denominated assets and buying franc-denominated assets, thus increasing the supply of marks and reducing the supply of francs. These changes in the markets for the franc and mark effectively would change the relative franc/DM price, that is, the exchange rate.

Table 2

**Some Representative Comparisons of Monthly Average Variability in Nominal Exchange Rates[1]**

| Country | 1974–78 | 1979–85 |
|---|---|---|
| **ERM** | | |
| Belgium | 20.3 | 13.6 |
| Denmark | 25.0 | 14.8 |
| France | 31.6 | 15.9 |
| Germany | 29.2 | 16.3 |
| Ireland | 36.0 | 12.2 |
| Italy | 36.0 | 19.3 |
| Netherlands | 21.1 | 13.2 |
| **Non-ERM** | | |
| Austria | 20.3 | 12.3 |
| Canada | 44.1 | 52.0 |
| Japan | 44.5 | 48.1 |
| Norway | 25.3 | 24.2 |
| Sweden | 30.2 | 31.6 |
| Switzerland | 44.0 | 25.9 |
| United Kingdom | 32.7 | 37.8 |
| United States | 34.7 | 55.7 |

[1]Adapted from table 16, Ungerer, et al. (1986). Figures are average values for the coefficient of variation, based on bilateral nominal exchange rates weighted by MERM weights.

[13]This model, taken from Dornbusch (1980), is based on the standard monetary approach to the balance of payments.

Notice, however, the effects of such an action. The money supply would expand in Germany and decline in France. First, if the Bundesbank were pursuing money growth within specified target ranges, the need for intervention of the sort described could well lead to money growth above the announced target path. Moreover, depending upon the magnitude and duration of intervention, the pursuit of a stable exchange rate (and its effects on the German money stock) could cause a rising price level in Germany; other short-run effects on output, unemployment and interest rates could be observed as well. Thus, in this one illustration, the two countries could achieve one objective at the expense of failing to attain others.[14]

## ECONOMIC PERFORMANCE BEFORE AND AFTER THE ERM

Whether exchange rate stability has improved economic performance or brought about greater policy convergence among ERM countries is an empirical issue. In this section, this issue is assessed in two complementary ways.

### *ERM vs. Non-ERM Economic Performance: Another Look at the Evidence*

To compare economic conditions before and after the ERM agreement, a set of monthly data for major indicators of policy actions and economic performance in the ERM countries and selected large non-ERM economies was assembled. The test consists of comparing the average growth rates and variances of the narrow (M1) money stock, CPI and index of industrial production and the average levels and variances of short-term interest rates between two periods: February 1975–February 1979 (before ERM), and April 1983–December 1987 (the "stable" ERM period). The interval between March 1979–March 1983, which IMF analysis has characterized as "frequent periods of exchange market strain and numerous consequent realignments of central rates," was not examined.[15] The transition period was omitted to focus on the comparison between the presumably less stable pre-ERM period and the relatively stable ERM period.

Specific hypotheses to be investigated with these comparisons include the following: If greater exchange rate stability brought about higher output growth and lower inflation, a comparison of period 1 versus period 3 should reveal significantly higher output growth (as measured by industrial production) and significantly lower inflation rates (as measured by CPIs) in the later period than in the earlier one. If these conditions are produced by the ERM, the same indicators for the non-ERM countries should exhibit significantly different, less beneficial output and price performance.

Equation 1 implies that stability in nominal exchange rate levels may be associated with greater volatility in money growth, interest rates or output, the equation's right-hand-side arguments.[16] If this is the case, measures of variability for these variables may have increased significantly in the ERM countries since 1979. Conversely, equation 1 would imply no change in the variability of these variables since 1979 in the non-ERM countries that did not attempt (at least explicitly) to reduce bilateral exchange rate variability.

Some caution in making these comparisons is necessary because they rest on a *ceteris paribus* assumption. The simple tests used here do not control for the effects of events that are unique to some countries (for example, a crop failure in Europe) or the differential effects across countries of a common phenomenon (for example, the energy price decline of the 1980s). Thus, rather than attributing a specific result — for example, a change in average money growth rates or the variance of interest rates — to the ERM, the comparisons are intended solely to reveal consistent patterns of change in the ERM and non-ERM countries. If there are consistent differences in the economic or policy performance between the ERM and non-ERM nations, it may be an initial indication of the possible effects of exchange rate coordination.

### *Differences in the Average Values of Selected Economic Indicators*

The results in table 3 examine the economic measures that the simple theoretical model suggested as important in achieving greater exchange rate stability. The table 3 entries compare the

[14]For more general treatments of how policies and economies are linked, see Frenkel (1986) or Kahn (1987).

[15]Ungerer, et al., p. 11.

[16]Wood (1983), examining data for all EMS countries, found greater nominal exhange rate stability to be associated with greater variation in unanticipated interest rate changes in all cases except Ireland.

## Table 3
## Mean Values of Major Economic Indicators

| Country | Period | Money growth (M1) | Inflation (CPI) | Short-term interest rates | Growth of industrial production |
|---|---|---|---|---|---|
| **ERM** | | | | | |
| Belgium | 2/75-2/79 | 6.72[1] | 6.77* | 5.93* | 6.18 |
| | 4/83-12/87 | 5.79[2] | 3.36* | 7.51* | 2.82[2] |
| Denmark | 2/75-2/79 | 13.70 | 8.72* | 11.67* | 4.19 |
| | 4/83-12/87 | 17.13[2] | 4.70* | 10.11* | 5.19[2] |
| France | 2/75-2/79 | 10.96 | 9.08* | 8.25* | 3.79 |
| | 4/83-12/87 | 8.65[2] | 4.75* | 9.84* | 1.42 |
| Germany | 2/75-2/79 | 10.75 | 3.72* | 3.85* | 3.11 |
| | 4/83-12/87 | 6.54 | 1.24* | 4.84* | 2.99 |
| Italy | 2/75-2/79 | 18.00* | 13.95* | 12.84* | 14.22 |
| | 4/83-12/87 | 11.64*[3] | 7.35* | 14.95* | 3.13[2] |
| Netherlands | 2/75-2/79 | 10.35 | 6.21* | 5.45 | 2.57 |
| | 4/83-12/87 | 6.00 | 1.43* | 5.72 | 2.85 |
| Ireland | 2/75-2/79 | 19.98* | N.A. | N.A. | 7.18 |
| | 4/83-12/87 | 7.50* | N.A. | N.A. | 8.55 |
| **Non-ERM** | | | | | |
| United Kingdom | 2/75-2/79 | 15.71 | 13.69* | 9.46 | 2.75 |
| | 4/83-12/87 | 17.22[2] | 4.59* | 9.98 | 3.20 |
| United States | 2/75-2/79 | 6.79 | 6.96* | 6.23* | 6.61 |
| | 4/83-12/87 | 8.85 | 3.46* | 8.15* | 5.23 |
| Canada | 2/75-2/79 | 7.76* | 8.16* | 8.53[4] | 4.09 |
| | 4/83-12/87 | 17.35*[2] | 4.11*[2] | 9.44 | 7.16[2] |
| Japan | 2/75-2/79 | 10.01 | 6.35* | 6.70* | 6.23 |
| | 4/83-12/87 | 5.39 | 1.27* | 5.39* | 5.88 |
| Austria | 2/75-2/79 | 7.87 | 5.30* | N.A. | 3.53 |
| | 4/83-12/87 | 5.81 | 2.71* | 3.72 | 3.32[2] |
| Norway | 2/75-2/79 | 10.01 | 7.92 | 8.40* | 6.20 |
| | 4/83-12/87 | 14.39[5] | 6.50 | 12.89*[5] | 12.24 |
| Sweden | 2/75-2/79 | 12.24 | 9.50* | 8.10* | 2.69 |
| | 4/83-12/87 | 4.09[2] | 5.88* | 11.23* | 4.73 |
| Switzerland | 2/75-2/79 | 10.39* | 1.84 | 1.62*[6] | N.A. |
| | 4/83-12/87 | 1.61*[2] | 2.02[2] | 3.00* | N.A. |

All data are monthly. Asterisks denote that values are statistically different at the 0.05 level.
[1]Data begin in 1976.02.
[2]Data end in 1987.09.
[3]Data end in 1987.06.
[4]Data begin in 1978.05.
[5]Data end in 1986.12.
[6]Data begin in 1975.09.
SOURCE: International Financial Statistics, *International Monetary Fund.*

mean values for major economic indicators prior to 1979 and since 1983; entries designated with an asterisk are values that differ significantly between the two periods shown.

The data show that the inflation rate of each ERM country has been reduced significantly since 1983. Some observers expected this result from an exchange rate agreement, arguing that the policies of low inflation countries, such as Germany, could dominate those of the high inflation countries, such as Italy. The bottom portion of table 3, however, indicates that inflation rates in the United Kingdom and other non-ERM countries — despite the absence of any explicit exchange rate agreement — also were significantly reduced.[17] This

[17]DeGrauwe and Verfaille, pp. 29–30, also show that the uncoordinated policy actions of non-ERM industrialized economies achieved lower average rates of inflation, and did so more quickly, than the coordinated ERM actions. This result is consistent with the theoretical reasoning in Rogoff (1985b).

Table 4
**Variances of Major Economic Indicators**

| Country | Period | Money growth (M1) | Inflation (CPI) | Short-term interest rates | Growth of industrial production |
|---|---|---|---|---|---|
| **ERM** | | | | | |
| Belgium | 2/75-2/79 | 188.80[1] | 15.35 | 5.06* | 12,371.77* |
| | 4/83-12/87 | 181.01[2] | 15.03 | 2.87* | 2,826.57*[2] |
| Denmark | 2/75-2/79 | 591.03* | 130.37* | 27.22* | 2,904.63 |
| | 4/83-12/87 | 2,406.07*[2] | 37.27* | 2.56* | 2,982.49[2] |
| France | 2/75-2/79 | 176.02* | 7.85 | 1.57* | 645.52 |
| | 4/83-12/87 | 707.15*[2] | 10.85 | 3.83* | 439.13 |
| Germany | 2/75-2/79 | 146.27 | 11.50 | 0.45 | 302.35* |
| | 4/83-12/87 | 177.64 | 7.37 | 0.53 | 1,116.63* |
| Italy | 2/75-2/79 | 172.73* | 54.18* | 8.56 | 29,548.77* |
| | 4/83-12/87 | 91.25*[3] | 15.66* | 7.03 | 749.01*[2] |
| Netherlands | 2/75-2/79 | 507.71* | 42.69* | 11.65* | 508.84* |
| | 4/83-12/87 | 153.99* | 19.64* | 0.29* | 1,808.63* |
| Ireland | 2/75-2/79 | 358.50 | N.A. | N.A. | 2,018.50 |
| | 4/83-12/87 | 409.71 | N.A. | N.A. | 2,266.87[2] |
| **Non-ERM** | | | | | |
| United Kingdom | 2/75-2/79 | 298.06 | 100.73* | 5.50* | 715.70* |
| | 4/83-12/87 | 417.33[2] | 26.00* | 1.40* | 158.17* |
| United States | 2/75-2/79 | 17.89* | 9.17 | 2.36 | 75.98 |
| | 4/83-12/87 | 48.71* | 6.86 | 2.32 | 63.41 |
| Canada | 2/75-2/79 | 96.47* | 18.88* | 2.68[4] | 214.42* |
| | 4/83-12/87 | 518.58*[2] | 7.99*[2] | 2.05 | 443.98*[2] |
| Japan | 2/75-2/79 | 289.58* | 97.78* | 6.06* | 162.64* |
| | 4/83-12/87 | 712.13* | 42.50* | 1.57* | 287.42* |
| Austria | 2/75-2/79 | 311.31 | 25.82 | N.A. | 529.33* |
| | 4/83-12/87 | 205.05 | 29.51 | 0.18 | 1,135.33*[2] |
| Norway | 2/75-2/79 | 1,334.30* | 45.21* | 6.50* | 1,610.54* |
| | 4/83-12/87 | 580.04*[5] | 25.83* | 1.32*[5] | 17,020.64* |
| Sweden | 2/75-2/79 | 815.42* | 34.73 | 2.90 | 408.92* |
| | 4/83-12/87 | 1,489.48*[2] | 31.72 | 4.27 | 1,455.67* |
| Switzerland | 2/75-2/79 | 618.98* | 10.36 | 1.03[6] | N.A. |
| | 4/83-12/87 | 146.38*[2] | 14.40[2] | 1.28 | N.A. |

All data are monthly. Asterisks denote that variances are statistically different at the 0.05 level.
[1]Data begin in 1976.02.
[2]Data end in 1987.09.
[3]Data end in 1987.06.
[4]Data begin in 1978.05.
[5]Data end in 1986.12.
[6]Data begin in 1975.09.
SOURCE: International Financial Statistics, *International Monetary Fund.*

result suggests that some common, worldwide phenomenon is a more likely source of lower inflation rates observed among the industrialized countries than the policy coordination associated with the ERM nations.

The remainder of the data in table 3 fail to identify any unique economic circumstances associated with the ERM group alone. Money growth declined significantly for two ERM countries, interest rates rose in four (and fell in one) and industrial production was statistically unchanged in all seven. The non-ERM group also displayed generally higher interest rates and unchanged industrial production growth. Thus, there is no change in the average value of a particular economic indicator that can be identified uniquely with the ERM countries.

## *Variation in Economic and Policy Indicators*

The results in table 4 show a mixed pattern of performance with respect to the variances of the

Table 5
**Growth in Real Trade Flows (Exports plus Imports)**

| | Period | With ERM countries | With non-ERM countries |
|---|---|---|---|
| **ERM country** | | | |
| Belgium | 1973–78 | 7.7% | 12.5% |
| | 1979–86 | 2.2 | 4.5 |
| Denmark | 1973–78 | 12.8 | 5.2 |
| | 1979–86 | 3.8 | 3.2 |
| France | 1973–78 | 6.8 | 8.5 |
| | 1979–86 | 2.9 | 5.7 |
| Germany | 1973–78 | 7.0 | 7.6 |
| | 1979–86 | 2.9 | 6.8 |
| Ireland | 1973–78 | 20.0 | 8.2 |
| | 1979–86 | 9.4 | 4.8 |
| Italy | 1973–78 | 4.6 | 5.4 |
| | 1979–86 | 8.1 | 10.1 |
| Netherlands | 1973–78 | 6.2 | 10.5 |
| | 1979–86 | 2.4 | 5.3 |
| **Non-ERM country** | | | |
| Austria | 1973–78 | 11.3 | 4.2 |
| | 1979–86 | 4.8 | 4.0 |
| Canada | 1973–78 | 4.4 | 4.2 |
| | 1979–86 | 6.5 | 7.2 |
| Japan | 1973–78 | 11.6 | 7.2 |
| | 1979–86 | 9.5 | 10.0 |
| Norway | 1973–78 | 8.2 | 9.7 |
| | 1979–86 | 9.3 | 6.6 |
| Sweden | 1973–78 | 6.0 | 3.8 |
| | 1979–86 | 4.6 | 4.9 |
| Switzerland | 1973–78 | 8.0 | 6.8 |
| | 1979–86 | 4.5 | 3.8 |
| United Kingdom | 1973–78 | 11.4 | 5.1 |
| | 1979–86 | 5.4 | 4.2 |
| United States | 1973–78 | 4.4 | 4.2 |
| | 1979–86 | 7.3 | 8.5 |

Data are nominal trade values, reported in dollars by the IMF, adjusted by the U.S. GNP deflator and the Federal Reserve Board's trade-weighted exchange rate index (TWEX).

assorted economic and policy indicators. Short-term interest rates were significantly less variable in the third period for three of the ERM countries but significantly more variable in France. Similarly, industrial production became significantly less variable in Italy, but more volatile in two other countries, especially in Germany, where the variance of industrial production increased by a factor of four.

In contrast, for the United Kingdom, which does not participate in the ERM, the variances of the inflation rate, interest rates and industrial production all *declined* significantly. While the variances of money growth increased significantly in four non-ERM countries, two of these countries and four non-ERM nations overall achieved less variable inflation rates. Three non-ERM countries experienced significantly less interest rate volatility, while none experienced greater variability. Five of the eight non-ERM countries saw greater output variability in the more recent period. Overall, as in table 3, this mixed picture does not yield any uniquely beneficial results associated with ERM membership.

## *Exchange Rate Variability and Trade Flows*

A somewhat different result emerges when data on trade flows are examined as in table 5. One possible result of reducing exchange rate variability is that the greater exchange rate certainty might increase trade flows. Since exchange rate

variability did decline among ERM countries but increased both among the non-ERM nations and between the ERM and non-ERM countries, it is interesting to see how trade flows changed after 1979 both within the ERM group and between the ERM and non-ERM nations.

Table 5 shows that the growth of intra-ERM trade *declined* in ERM economies (except Italy) during the period of greater exchange rate stability. In contrast, trade by non-ERM members both with each other and the ERM group often rose, even though these exchange rates became more variable. Canada, Japan and the United States are the notable cases of this result. On the basis of these results, again holding other things constant, greater ERM exchange rate stability was not associated with relatively larger intra-ERM trade.

## SUMMARY

Proposals for policy coordination among the major industrial economies have been discussed more frequently in recent years. Initially such proposals were intended to correct what were perceived as problems created by a "high" value of the U.S. dollar; subsequently, they were intended to mitigate the adverse consequences of variable exchange rates and the falling value of the dollar.

One attempt to coordinate domestic policies in recent years in pursuit of stable bilateral nominal exchange rates is found in the EMS. Evidence based on data before and after the establishment of the EMS suggests that, while bilateral exchange rates have become more stable, other measures of economic performance and policy actions fail to show the effects of such coordination. Lower inflation rates in ERM countries have been matched by lower inflation rates in major non-ERM economies. Other variables, such as money growth, interest rates and real output measures also show no consistent differential response in ERM and non-ERM countries in recent years. The data do not even show that intra-ERM trade has increased any more than trade with non-ERM countries, despite the reductions in exchange rate variability among ERM nations. Overall, the only experience we have with concerted policy coordination does not indicate that general economic or policy measures have been much affected — one way or another — by such coordination.

## REFERENCES


Bank for International Settlements. Annual Report, (Basle, 1987).

Crook, Clive. "Living With Uncertainty," supplement to *The Economist* (September 26, 1987).

Currie, David, and Paul Levine. "International Cooperation and Reputation in an Empirical Two-Bloc Model," paper presented at the Konstanzer Seminar on Monetary Theory and Monetary Policy, Konstanz, West Germany (June 17, 1987).

DeGrauwe, Paul. "International Trade and Economic Growth in the European Monetary System," *European Economic Review* (1987), pp. 389–98.

_____. "Exchange Rate Variability and the Slowdown in Growth of International Trade," *IMF Staff Papers* (March 1988), pp. 63–84.

DeGrauwe, Paul, and Guy Verfaille. "The European Monetary System: An Evaluation," mimeo (University of Louvain, January 1986).

Dornbusch, Rudiger. "Exchange Rate Economics: Where Do We Stand?" *Brookings Papers on Economic Activity* (1:1980), pp. 143–85.

Farrell, Victoria, et al. "Effects of Exchange Rate Variability on International Trade and Other Economic Variables," Staff Study No. 130 (Board of Governors of the Federal Reserve System, December 1983).

Fels, Joachim. "The European Monetary System 1979–87: Why Has It Worked?" *Intereconomics* (September/October 1987), pp. 216–22.

Fischer, Stanley. "International Macroeconomic Policy Coordination," Working Paper No. 2244 (National Bureau of Economic Research, May 1987).

Franke, Günter. "Exchange Rate Volatility and International Trade: The Option Approach," Working Paper (revised), (Universität Konstanz, August 1987).

Frankel, Jeffrey, and Katherine Rockett. "International Macroeconomic Policy Coordination When Policymakers Do Not Agree on the True Model," *American Economic Review* (June 1988), pp. 318–40.

Frenkel, Jacob A. "International Interdependence and the Constraints on Macroeconomic Policies," *Weltwirtschaftliches Archiv* (Heft 4, 1986), pp. 615–45.

Kahn, George. "International Policy Coordination in an Interdependent World," Federal Reserve Bank of Kansas City *Economic Review* (March 1987), pp. 14–32.

Karamouzis, Nicholas V. "Lessons from the European Monetary System," Federal Reserve Bank of Cleveland *Economic Commentary* (August 15, 1987).

Organization for Economic Cooperation and Development. "Cooperative Policy Action to Restore Satisfactory Growth," Economic Outlook No. 41 (OECD, June 1987).

Rogoff, Kenneth. "Can Exchange Rate Predictability Be Achieved Without Monetary Convergence? Evidence from the EMS," *European Economic Review* (1985a), pp. 93–115.

_____. "Can International Monetary Cooperation Be Counterproductive?" *Journal of International Economics* (May 1985b), pp. 199–217.

Ungerer, Horst, Owen Evans, Thomas Mayer and Philip Young. *The European Monetary System: Recent Developments*, Occasional Paper No. 48 (Washington, D.C.: International Monetary Fund, December 1986).

Wood, Geoffrey E. "The European Monetary System — Past Developments, Future Prospects, and Economic Rationale," in Roy Jenkins, ed., *Britain and the EEC* (London: Macmillan, 1983).

# Appendix
# The European Currency Unit

The European Currency Unit (ECU) serves primarily as a unit of account for a variety of functions within the European Community (EC). For example, the value of the ECU is a reference point from which to judge the divergence of individual currency values from desired values. More generally, the ECU is a unit of account for the EC's budget, its Common Agricultural Policy and its other finance and credit activities.

The ECU itself is simply a weighted-basket of EMS member currencies. As shown in the table, as of September 17, 1984, one ECU was equal to the market value of 3.71 Belgian francs, 0.219 Danish krones and so on across the 10 EMS currencies. Over time, both the weights attached to member currencies and their market values relative to non-EMS currencies have changed so that the value of the ECU has varied (see chart on opposite page).

The ECU originally had been intended to serve also as a means of settlement and a reserve asset. In both cases, however, its use has been small. It is rarely used as a means of settlement and, as a reserve asset, is largely a substitute for the gold and dollar deposits a member country gave up to join the EMS.

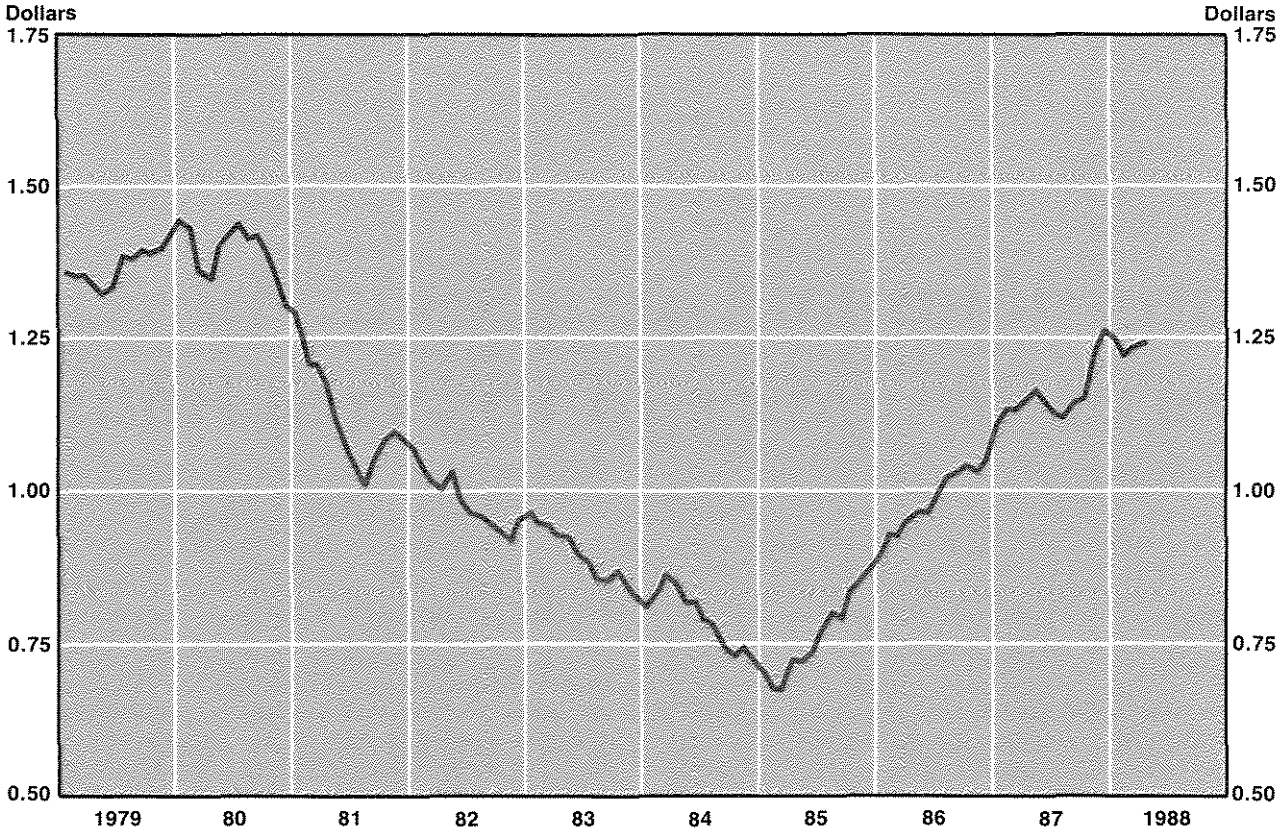
The private use of ECUs, however, is a different matter. Because it represents a basket of EC currencies and because a formal agreement exists to keep constituent currencies within specified bounds, investors have viewed financial instruments denominated in ECUs to be less risky than similar instruments denominated in a specific currency. For this reason, sight and time deposits, loans and bonds all have been offered denominated in ECUs. Thus, the ECU may be viewed best as a currency index unit of account that varies less than its constituent currencies.

## Representative Composition of the ECU

| Currency | National currency units September 17, 1984 | Percentage weights September 17, 1984 |
|---|---|---|
| Belgian franc | 3.71 | 8.2 |
| Danish krone | 0.219 | 2.7 |
| French franc | 1.31 | 19.0 |
| Deutsche mark | 0.719 | 32.0 |
| Irish pound | 0.00871 | 1.2 |
| Italian lira | 140.00 | 10.2 |
| Luxembourg franc | 0.14 | 0.3 |
| Netherlands guilder | 0.256 | 10.1 |
| Pound sterling | 0.0878 | 15.0 |
| Greek drachma | 1.15 | 1.3 |
| | | 100.0 |

SOURCE: Ungerer, et. al. (1986), table 4.

# Chart 1
## Value of the ECU in U.S. Dollars




NOTE: Data are period averages.